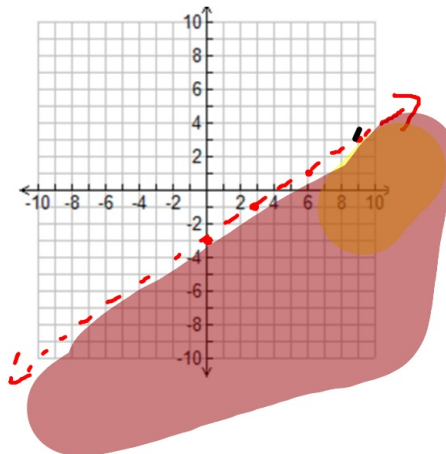


Bellwork: 1/30/13

Graph the following linear inequality on the grid provided:

$$\begin{array}{r} 4x - 6y > 18 \\ -4x \quad -4x \\ \hline 6y > -4x + 18 \\ -6 \quad -6 \quad -6 \\ \hline y < \frac{2}{3}x - 3 \end{array}$$



Page 1

Algebra 2
Quadratic Applications, Packet

Name: _____
Date: _____ Pd: _____

1. A manufacturer of lighting fixtures has a daily production cost of $C = 800 - 10x + 0.25x^2$, where C is the total cost (in dollars) and x is the number of units produced.

a) How many fixtures should be produced each day to yield a minimum cost?

Answer: _____

b) What is the minimum cost?

$$\begin{aligned} 0 &= -16t^2 + 48t \\ \frac{-48 \pm \sqrt{48^2 - 4(-16)(0)}}{2(-16)} &= \frac{-48 \pm \sqrt{2304}}{-32} \end{aligned}$$

Answer: _____

2. Shawn hit a foul ball straight up over home plate. The height of the ball over the level of the bat, $h(t)$, is given by the function $h(t) = 48t - 16t^2$ where t is the time in seconds after the ball left the bat.

If the catcher is going to attempt to catch the ball, how long does she have to get ready?

$$\begin{aligned} 0 &= 48t - 16t^2 \\ 0 &= -16t^2 + 48t \\ 0 &= -16t(t - 3) \end{aligned}$$

$t = 0$ $t = 3$

how long is ball in air
 $y = 0$

The catcher has 3 seconds to get ready.

Page 2

6. Jenna's bedroom has an area of 160 square feet. The length is 6 feet longer than the width. Find the dimensions of the room.

Handwritten solution for problem 6:

Diagram: A rectangle with width labeled x and length labeled $x+6$. The area is labeled 160.

$$A = x(x+6)$$

$$160 = x^2 + 6x$$

$$x^2 + 6x - 160 = 0$$

$$(x+16)(x-10) = 0$$

$$x+16=0 \quad x-10=0$$

$$x = -16 \quad x = 10$$

Answer: *the dimensions of the room are 10ft by 16ft.*

7. The height y (in feet) of a ball thrown by a child is $y = -\frac{1}{12}x^2 + 2x + 4$ where x is the horizontal distance (in feet) from where the ball is thrown.

a) How high is the ball when it leaves the child's hand?

Answer: _____

b) How high is the ball when it is at its maximum height?

Answer: _____

c) How far from the child does the ball strike the ground?

Answer: _____

